CERTIFICATION PROGRAM

Landscape/Turf Specialty Golf Course Examination Equations

Basic and non-irrigation equations and conversions are assumed to be known by candidates. POI refers to Principles of Irrigation, Irrigation Association, 2012. GCI refers to Golf Course Irrigation by Barrett, et al. 2003. The equations are presented in the latest IA format and may appear different from those presented in the reference material.

1 cubic foot of water = 7.48 gallons 1 acre-inch = 27,154 gallons 1 acre-foot = 325,848 gallons

$Q = A \times V$	GCI p. 198
$V = \frac{0.408 \times Q}{ID^2}$	GCI p. 198
$R_w = \frac{1{,}000 \times AVL}{2 \times L \times I}$	POI C2-1
$L = \frac{1{,}000 \times AVL}{2 \times I \times R_w}$	POI C2-2
$V_d = \frac{2 \times L \times I \times R_w}{1{,}000}$	GCI p. 221
$V_d = \frac{2 \times K \times I \times L}{CM}$	POI C3-1
$V = I \times R$	GCI p. 211
$H_v = \frac{V^2}{2 \times g}$	POI 8-4

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$Whp = \frac{Q \times H}{3{,}960}$	POI 9-2
$Bhp = \frac{Whp}{(E_p / 100)}$	GCI p. 38
$NPSHa = H_a - H_s - H_f - H_{vp}$	POI 9-1
$\frac{Q_2}{Q_1} = \frac{N_2}{N_1}$; $\frac{H_2}{H_1} = \left(\frac{N_2}{N_1}\right)^2$; $\frac{Bhp_2}{Bhp_1} = \left(\frac{N_2}{N_1}\right)^3$	POI 9-5
$\frac{Q_2}{Q_1} = \frac{D_2}{D_1}$; $\frac{H_2}{H_1} = \left(\frac{D_2}{D_1}\right)^2$; $\frac{Bhp_2}{Bhp_1} = \left(\frac{D_2}{D_1}\right)^3$	POI 9-6
$PR = \frac{96.3 \times Q}{A}$ Various A values $A = S_r \times S_l$ $A = 0.866 \times S_s^2$ $A = 0.8 \times D_t \times S_s$	GCI p. 240 POI 3-2, 2-4, 3-5
$p_s = \frac{0.07 \times V \times L}{T}$	GCI p. 199
$ET_c = K_c \times ET_o$	GCI p. 8
$RT = 60 \times \frac{ET_o \times K_c \times Area_{type} \times Station_{adj}}{PR \times AE}$	GCI p. 238
$IR_{gross} = \frac{IR_{net}}{E_a / 100}$	POI 5-4